What is claimed is:

1. A self-scanned photodiode array wherein charge from individual pixels is switched from each pixel sequentially onto at least one output video line after a predetermined exposure time (t_o) comprising:

at least one light source;

at least one sample cell having means for receiving light from said at least one light source;

a photo-diode array having pixels for collecting light transmitted through said at least one sample cell;

means for reading said pixels;

means for skipping the reading of selected pixels for one or more additional exposure times allowing said selected pixels to be exposed for specified integer multiples (M) of said predetermined exposure time, thereby allowing said selected pixels receiving less light to accumulate additional charge before being read and thereby reducing number of read cycles and improving signal-to-noise ratio.

2. The self-scanned photodiode array of claim 1 wherein different pixels are exposed for the same or different integer multiples (M) of said predetermined exposure time.

3. The self-scanned photodiode array of claim 1 in which said predetermined exposure time does not exceed saturation of the pixel or pixels accumulating charge at a highest rate within a predetermined range of pixels.

4. The self-scanned photodiode array of claim 1 wherein specified integer multiples M are chosen such that each pixel signal, within a predetermined range of pixels approaches but does not exceed saturation.

5. The self-scanned photodiode array of claim 1 wherein said exposure time of individual pixels, Mt_o, does not cause saturation of pixels from which charge is measured.

6. The self-scanned photodiode array of claim 1 wherein said exposure time of each pixel, is an integer multiple M of said predetermined exposure time, which does not include the integer 1.

7. The self-scanned photodiode array of claim 1 wherein said sample time is defined as a time taken for one or more complete measurements of the full or selected portion of the photodiode array, said individual pixel exposure times Mt_o being submultiples of said sample time.

8. The self-scanned photodiode array of claim 1 wherein said predetermined exposure time t_0 is established when said photo-diode array receives said light according to a reference condition.

9. The self-scanned photodiode array of claim 3 wherein the predetermined range of pixels includes the full array.

10. The self-scanned photodiode array of claim 4 wherein the predetermined range of pixels includes the full array.

11. The self-scanned photodiode array of claim 1 wherein the value recorded when a pixel read is skipped is set to zero to avoid the addition of unnecessary read noise.

12. A method of improving signal to noise ratio of measurements made using a self-scanned photodiode array to detect light in the ultraviolet, visible and infrared portions of a light spectrum comprising the steps of :

exposing pixels of said photodiode array to light received from a reference condition and measuring the spectrum of a short exposure time causing no saturation of said pixels;

measuring a dark spectrum of said pixels with shutter closed using said short exposure time;

calculating a dark corrected reference signal from each pixel;

calculating an exposure time for each pixel such that its accumulated charge would reach a predetermined level, close to but below saturation;

establishing a predetermined exposure time t_0, short enough that no pixel is a specified range of interest will saturate;

assigning integers M such that individual pixels are exposed for integer multiples of the predetermined exposure time Mt_0, such that after time Mt_0 said individual pixels have accumulated charge close to but not exceeding saturation;

re-measuring dark spectrum with shutter closed using exposure pattern determined by integers;

re-measuring reference spectrum using exposure pattern determined by integers, thereby creating a dark-corrected reference spectrum;

Measuring sample spectra using the same exposure pattern determined by integers and creating dark corrected sample spectra;

combining reference and sample spectra to determine absorption characteristics of sample and thereby identify and quantitate same with improved signal-to-noise ratio.